This Session

- Understand concepts of Configuration Management
  - Artefact Pipeline, Infra as Code, Automation, DAG

- Learn how to use Packer to Build your images
  - customize with PowerShell, DSC, and Chocolatey

- Be able to apply DevOps concepts and practices
  - Cloud or on-premises

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Agenda

The Art of managing OSes, VMs, and Tins
    Build (OSD), Patch, configure and Deploy! And patch forever!
    Faster & standard: The Golden Image
    Acronym fest: DISM, WDS, MDT, sysprep, WIM, WSUS, SCCM

The Release Pipeline Model, and tools
    Source – Build – Test – Release
    Packer
    PowerShell & DSC
    Chocolatey

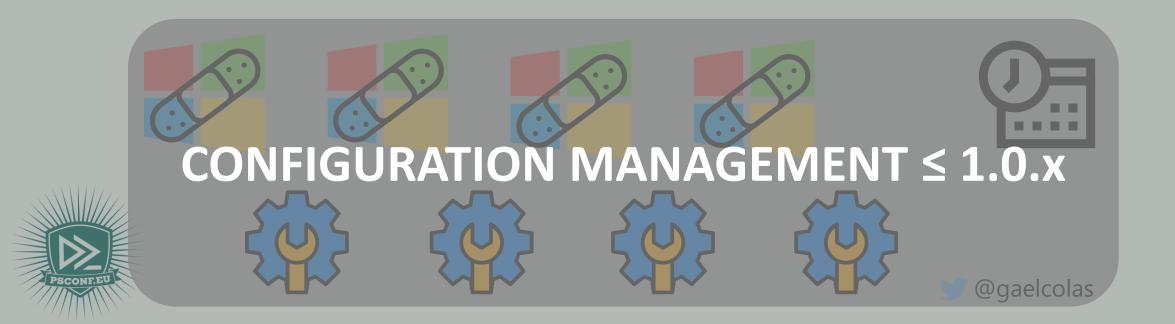@gaelcolas

Traditional OS Lifecycle

Provisioning
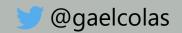
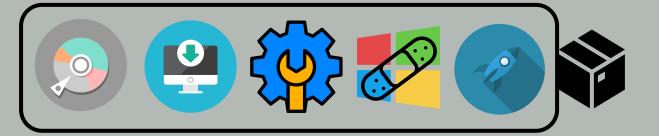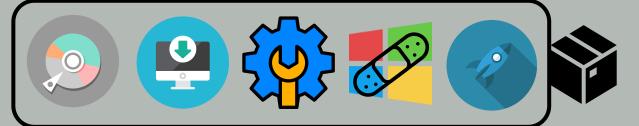| Media | OS Deployment | Configuration | Patching | Deployment |

CONFIGURATION MANAGEMENT ≤ 1.0.x

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PSCONF.EU

Configuration Management Evolution
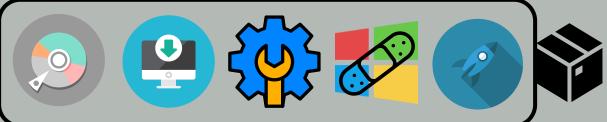
'Version'	Name	Key Concepts
0.0.x	Manual	Changes and abstractions are GUI-Driven
0.5.x	Scripted Transform	Code, Deployment Scripts, Imperative, Transformations assume a starting state
1.0.x	Policy-driven Convergence	Change Pipeline, Idempotency, Drift management, operation validation
2.0.x	Container model	Artefact everything, Immutability, microservices

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Config Management 2.0.x
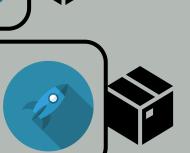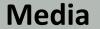
IMMUTABLE CONTAINERS

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Provisioning from Raw media

Media	OS Deployment	Configuration	Patching	Deployment

~ 3-7 hours

| ISO
WIM | WDS
MDT
SCCM | Point-n-click
AutoUnattend.xml
WinPE / MDT
Run-once scripts
SCCM
DSC
3rd party / custom | WSUS
DISM | Flick of the switch |

PSCONF.EU

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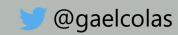
Captured Image, Template & Virtualization

Media   **OS Deployment**   **Configuration**   **Patching**   **Deployment**

Captured Image, Template & Virtualization

Candy Crush type Configuration Management

~ 2 – 45 min

Deployment
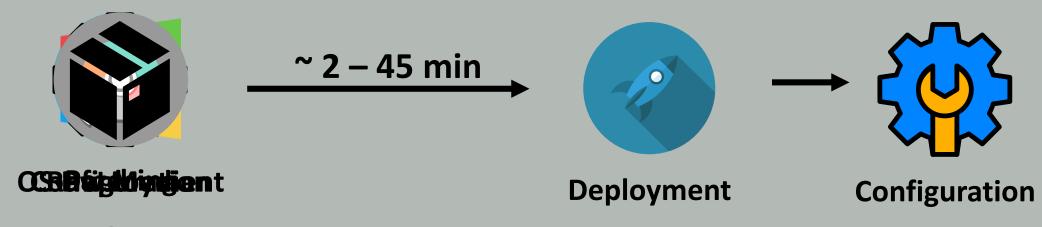
Configuration

MDT Capture
SCCM
SysPrep
VM Template

Point and Click automation
≠
Infra as Code Pipeline
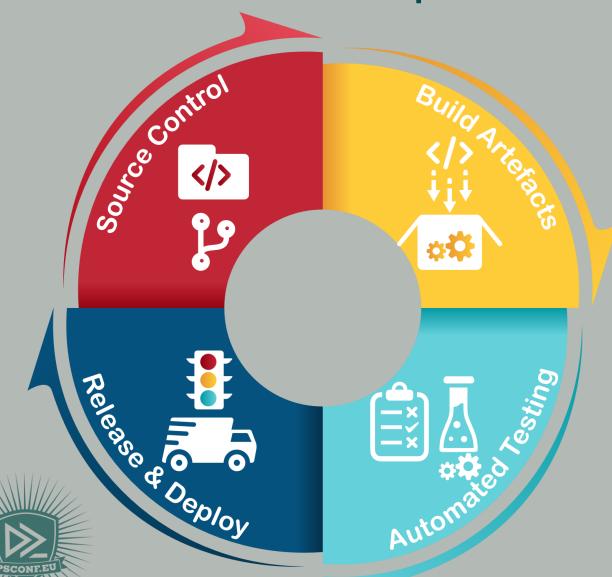
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The Release Pipeline Model
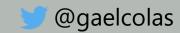
"**The Release Pipeline Model**" whitepaper
https://aka.ms/TRPM
PDF By Steven Murawski & Michael Greene

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Provisioning from Raw media

Media

OS Deployment

Configuration

Patching

Capture
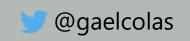
ISO
WIM

WDS
MDT
SCCM

Point-n-click
AutoUnattend.xml
WinPE / MDT
Run-once scripts
SCCM
DSC
3rd party / custom

WSUS
DISM

Flick of the switch

PSCONF.EU

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Incremental Configurations

Media   RAW   BASE   ROLE1   ROLE2

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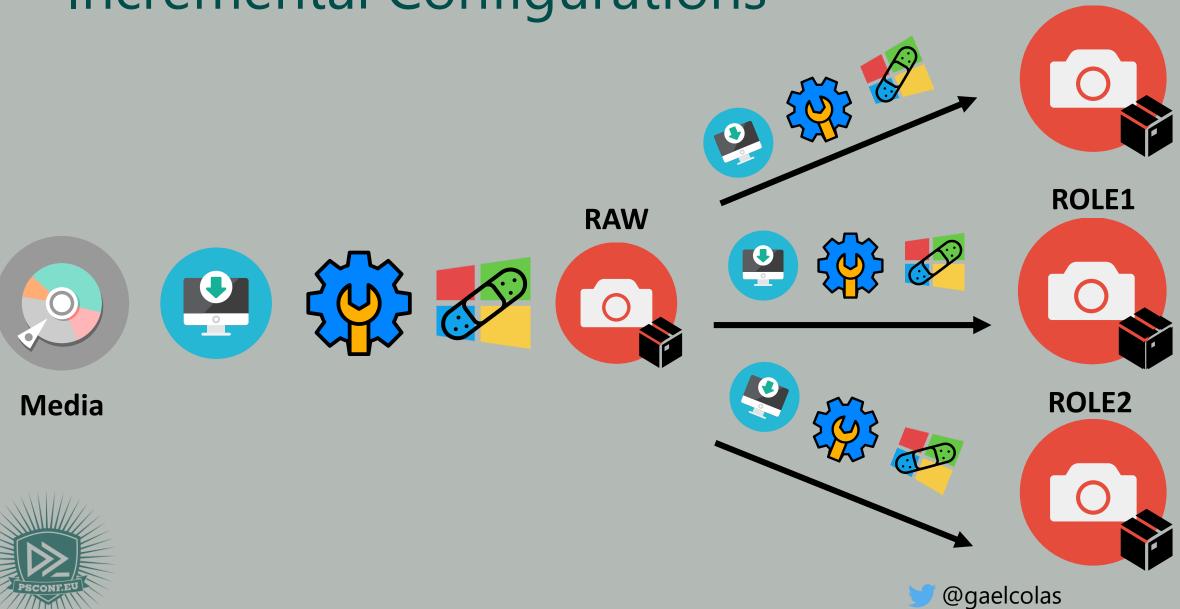
Incremental Configurations

BASE

RAW

ROLE1

Media

DIRECTED ACYCLIC GRAPH (DAG)

ROLE2

PSCONF.EU

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Why Golden Image?

Automating Windows provising

- WinRM configuration

- Network & Firewall Settings (Public Profile)

- PowerShell Version

- Module availability (Package Management 1.0.0.1)

DEMO
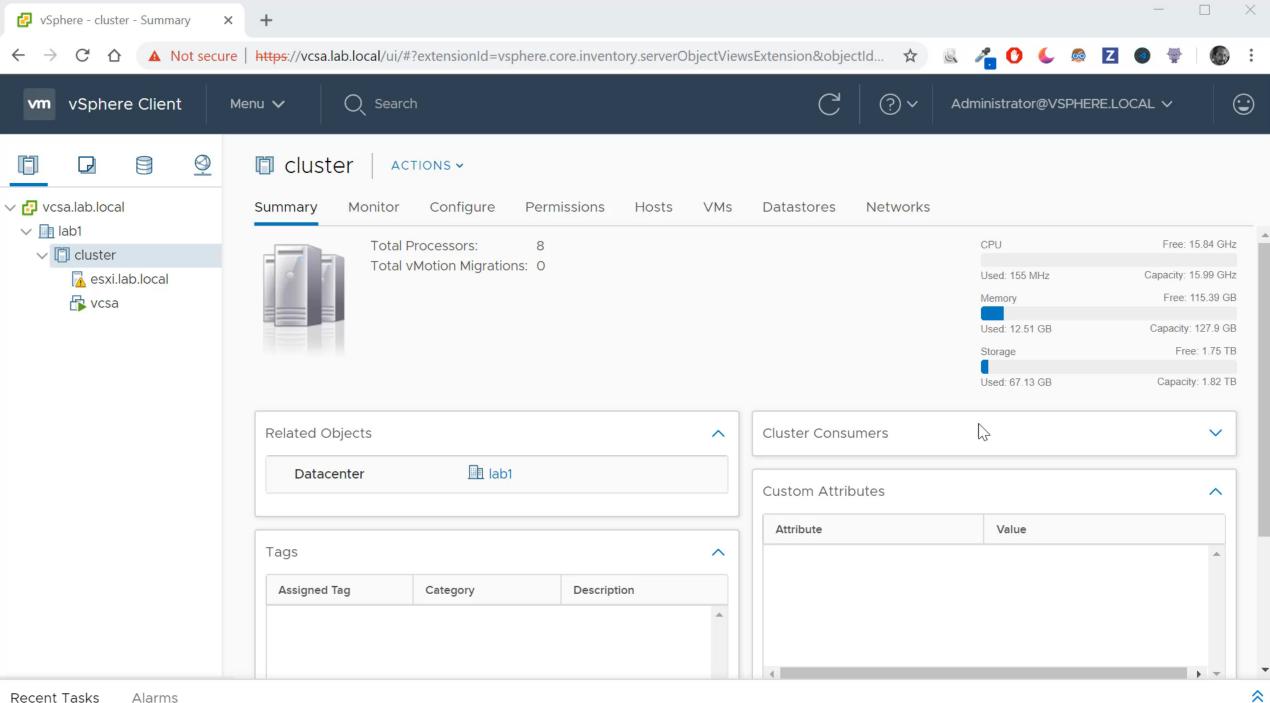
Packer
Creating a Win 2019 VM Template on ESXi / vSphere

HashiCorp
Packer

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Not secure | https://vcsa.lab.local/ui/#?extensionId=vsphere.core.inventory.serverObjectViewsExtension&objectId...

vm vSphere Client

Menu ⌄

Search

Administrator@VSPHERE.LOCAL ⌄

vcsa.lab.local
- lab1
  - cluster
    - esxi.lab.local
    - vcsa

cluster | ACTIONS ⌄

Summary	Monitor	Configure	Permissions	Hosts	VMs	Datastores	Networks

Total Processors: 8
Total vMotion Migrations: 0

CPU
Free: 15.84 GHz
Used: 155 MHz
Capacity: 15.99 GHz

Memory
Free: 115.39 GB
Used: 12.51 GB
Capacity: 127.9 GB

Storage
Free: 1.75 TB
Used: 67.13 GB
Capacity: 1.82 TB

Related Objects ⌃

Datacenter	lab1

Cluster Consumers ⌄

Custom Attributes ⌃

Attribute	Value

Tags ⌃

Assigned Tag	Category	Description

Recent Tasks | Alarms

Building RAW Template

RAW

Media

Builders	**Vmware-iso**
Provisioners	**Windows-shell** **Windows-restart** **PowerShell**
Post Processors	**vmware-template**

HashiCorp
Packer

PSCONF.EU

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Packer-Windows

Stefan Scherer
StefanScherer

scripts

- ▷ 🗎 docker
- ◆ .gitignore
- ⚙ chef.bat
- ⚙ chocolatey.bat
- ⚙ chocopacks.bat
- ⚙ compact.bat
- ⚙ compile-dotnet-assemblies.bat
- ⚙ create-domain.ps1
- ⚙ debloat-windows.ps1
- ⚙ dis-updates.bat
- ⚙ dis-updates.ps1
- ⚙ disable-auto-logon.bat
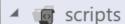
📖 **packer-windows**

Forked from joefitzgerald/packer-windows

Windows Templates for Packer: Win10, Server 2016, 1709, 1803, 1809, 2019, 1903, Insider with Docker

● PowerShell   ★ 388   ⑂ 154

{ } windows_2012_r2.json
{ } windows_2012_r2_core.json
{ } windows_2012_r2_hyperv.json
{ } windows_2016.json
{ } windows_2016_ami.json
{ } windows_2016_core.json
{ } windows_2016_core_ami.json
{ } windows_2016_dc.json
{ } windows_2016_docker.json
{ } windows_2016_docker_azure.json
{ } windows_2016_hyperv.json
{ } windows_2019.json
{ } windows_2019_core.json
{ } windows_2019_core_ami.json
{ } windows_2019_docker.json
{ } windows_2019_docker_azure.json
{ } windows_7.json
{ } windows_81.json
{ } windows_server_1709.json
{ } windows_server_1709_docker.json
{ } windows_server_1803.json
{ } windows_server_1803_docker.json

@stefscherer

Matt's Blog post

@matthodge

{} win2019_RAW.json ✕

{} win2019_RAW.json ▸ [ ] builders ▸ {} 0

```json
You, a few seconds ago | 2 authors (Gael Colas and others)
1  {
2      "builders": [
3          {
4              "boot_wait": "4m",
5              "communicator": "winrm",        Gael Colas, 19 days ago • adding all the files from S
6              "disk_size": "{{user `disk_size`}}",
7              "remote_type": "esx5",
```

PROBLEMS 28   OUTPUT   DEBUG CONSOLE   TERMINAL   1: powershell ▾

PS C:\src\packer-templates>

pin-powershell.bat
prepare-for-upload-...
rsync.bat
salt.bat
set-powerplan.ps1
set-winrm-automatic...
sysprep.bat
uac-enable.bat
unattend.xml   M
vm-guest-tools.bat
wait-for-desktop-file....
wait-for-tiworker.ps1
win-updates.ps1
.gitattributes
.gitignore
build.ps1
LICENSE
make_unattend_iso.ps1
{} win2019_BASE.json M
{} win2019_RAW.json M

▸ OUTLINE

DEMO

Packer & DSC

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Not secure | https://vcsa.lab.local/ui/#?extensionId=vsphere.core.datacenter.monitor.tasksView&objectId=urn:vm...

vm vSphere Client

Menu ⌄

Search

Administrator@VSPHERE.LOCAL ⌄

vcsa.lab.local
- lab1
  - Discovered virtual ma...
  - packer-templates
    - win2019_RAW
  - vcsa

🗐 **lab1** ACTIONS ⌄

Summary | Monitor | Configure | Permissions | Hosts & Clusters | VMs | Datastores | Networks

▼ Issues and Alarms
  - All Issues
  - Triggered Alarms
▼ Performance
  - Advanced
▼ Tasks and Events
  - Tasks
  - Events

◀ Previous ▶ Next

Task ...	Target	Status	Details	Initiat...	Queu...	Start ...	Com...	Exec...	Server
Delete ...	🗐 co...	✔ Co...		VSPHE...	5 ms	06/06/...	06/06/...	99 ms	vcsa.la...
Power ...	🗐 co...	✔ Co...		VSPHE...	6 ms	06/06/...	06/06/...	294 ms	vcsa.la...
Clone v...	🗐 wi...	✔ Co...		VSPHE...	11 ms	06/06/...	06/06/...	49 s	vcsa.la...
Registe...	📁 pa...	✔ Co...		VSPHE...	3 ms	06/06/...	06/06/...	497 ms	vcsa.la...
Unregis...	🗐 wi...	✔ Co...		VSPHE...	4 ms	06/06/...	06/06/...	48 ms	vcsa.la...
Create ...	🗐 lab1	✔ Co...		VSPHE...	7 ms	06/06/...	06/06/...	9 ms	vcsa.la...
Unregis...	🗐 wi...	✔ Co...		VSPHE...	5 ms	06/06/...	06/06/...	16 ms	vcsa.la...
Delete f...	📁 pa...	✔ Co...		VSPHE...	13 ms	06/06/...	06/06/...	9 ms	vcsa.la...

100 items

No items selected
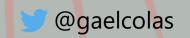
Recent Tasks   Alarms

DEMO

Raw media, ISO, WIM, DISM

Windows Image File

Deployment Image Servicing and Management

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Patching your WIM

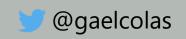| **Raw Media**	**OS Deployment**	**Configuration**	**Patching**	**Deployment**
ISO DISM WIM	WDS MDT SCCM	Point-n-click AutoUnattend.xml WinPE / MDT Run-once scripts SCCM DSC 3rd party / custom	WSUS	Flick of the switch

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The End

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